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ABSTRACT

The relationship between college persistence and the receipt of grant aid was studied with full-time students at public and private four-year institutions, based on data from the High School and Beyond (HS&B) study. Two measures of persistence were considered: (1) the percent of students who dropped out during the year and (2) for students who successfully persisted the previous year, the percent who returned to the same school to continue their studies. To control for differences in persistence rates for lower income families, the analyses included adjustments for family income levels. To estimate the effects of grants on college dropout rates, four groups of students were compared: students who received no grants, students who received any type of grant in any amount, students who received Pell grants in any amount, and students who received grant aid totaling at least one-half of tuition costs. In seven of eight comparisons, the "no grant" group dropped out during the year at higher rates than the "big grant" group. In public institutions, students who received some grant aid dropped out at lower rates than students who did not receive any grants during their first 3 years of college. Information on the research methodology is appended. (SW)

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The Effects of Grants on College Persistence

College students stay in school at higher rates when they receive grants or scholarships. This finding is based on the High School and Beyond (HS&B) study conducted by the Center for Education Statistics. The HS&B study focused on data from about 12,000 high school seniors in 1980 and their subsequent educational activities in 1982 and 1984 (see methodology and technical notes).

The Pell and Supplementary Educational Opportunity Grant programs, funded by the Federal Government, are multi-billion dollar programs designed to improve access, choice, persistence, progress, and completion in postsecondary education. Many States, colleges, and private organizations also provide grant or scholarship funds (or both) to attain these same goals. Most of these grant programs provide funds for college expenses based on financial need. The extent of financial need is established by determining the difference in the financial resources of students (and their families) and the costs of college. Clearly, students whose financial needs are met with these funds should be more likely to be successful than students whose financial needs are not met. The estimates presented below describe how well students persist in college, depending upon receipt of grant aid.

College persistence

Although college persistence is perceived as the simple notion of "staying in school," it is, in fact, a relatively complex series of transitions. To successfully persist, a beginning freshman must not drop out during the first year; not transfer for a different educational program; reenter for the sophomore year; not drop out during the second year, and so on. The complexity is compounded by the variety of types of postsecondary programs, degrees, and certificates offered. Additionally, traditional full-time freshmen (who graduated from high school the previous year) are not as typical as they were a decade ago.

The HS&B sample of 1980 high school seniors is ideally suited for producing estimates of college persistence for students pursuing bachelors degrees in traditional enrollment patterns at 4-year institutions. Two measures of persistence are presented below: (1) the percent of students who dropped out during the year, and (2) for students who successfully persisted the previous year, the percent who returned to the same school to continue their studies. Both measures are limited to full-time students attending public and private 4-year colleges and universities.

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Table 1.--Percent of traditional students who dropped out during the year, and percent of traditional, successfully persisting students who returned to the same institution to continue postsecondary education, by year of enrollment and type of college: 1980 high school seniors

Academic year of college	Private[1]		Public[2]	
	Dropout[3]	Returned	Dropout	Returned
1980-81	6.4 (1.05)	N/A[4]	10.1 (0.98)	N/A
1981-82	11.2 (1.53)	80.1 (1.86)	11.6 (1.03)	78.6 (1.36)
1982-83	2.5 (0.71)	88.2 (1.56)	6.5 (0.90)	89.1 (1.17)
1983-84	2.3 (0.83)	94.9 (1.10)	5.6 (0.88)	91.6 (1.03)

[1]Private 4-year colleges and universities as identified in the Higher Education General Information Survey.
[2]Public 4-year colleges and universities as identified in the Higher Education General Information Survey.
[3]Attended for fewer than 8 months during the academic year, September through May (see methodology and technical notes).
[4]Return is impossible for the first year.
Note.--The values in parentheses are standard error estimates calculated using Taylor residual procedures.

As may be seen in table 1, about 6 percent of full-time, traditional students in private 4-year colleges and universities dropped out during the first year. This first-year dropout rate was higher in public 4-year schools (10 percent) ($p<.01$). Of the first-year students who persisted successfully, about four-fifths returned to the same college for their second year (private, 80 percent; public, 79 percent). Slightly more than one-tenth (11 percent) of the full-time, traditional second-year students dropped out during their second year. Nearly 90 percent of the successful second-year students returned to the same college for their third year (private, 88 percent; public, 89 percent). Fewer private college students dropped out during their third year when compared with public college students (2.5 vs. 6.5 percent) ($p<.01$). More of the successfully persisting third-year students in private colleges than in public colleges returned for the fourth year (95 vs. 92 percent) ($p<.05$). Finally, fourth-year students in public colleges dropped out at slightly higher rates than did students in private colleges (6 vs. 2 percent) ($p<.01$).

At first glance, these rates are all relatively low. However, the cumulative effect of the winnowing away of persistence is more profound than these estimates suggest singly. Specifically, in the private 4-year colleges and universities, only 53 percent ((100-6.4 percent) x 80.1 percent x (100-11.2) x 88.2 x (100-2.5) x 94.9 x (100-2.3)) of the full-time, traditional students persist for 4 years in the same school. In the public 4-year colleges and universities, the comparable rate is only 45 percent. Hence, persistence rates indicate that only about one-half of the college students persist continually for 4 years.

Family income adjustments

Many of the grant programs, and especially the Pell grant program, award funds based on the financial need of the students. Family income levels reflect different levels of financial need. Persistence rates also vary by family income levels. For example, while 6 percent of students in private 4-year colleges and universities dropped out during their first year, 15 percent of students from families with incomes below $7,000 dropped out, and only 3 percent of students from families with incomes above $38,000 dropped out ($p<.10$). Hence, poor persistence rates may be found for grant recipients simply because grant recipients frequently come from lower income families. To control for these differences, the subsequent analyses include adjustments for family income levels.

Grant effects on dropout rates

To estimate the effects of grants on college dropout rates, 4 groups of students were compared: (1) students who received no grants, (2) students who received any type of grant in any amount, (3) students who received Pell grants in any amount, and (4) students who received grant aid totaling at least one-half of tuition costs. Only the first group is distinct from the other three. Students who received no grants serve as a benchmark for comparisons with others. In some ways, the "no grants received" group is a misleading benchmark, because many grant programs are need-based. That is, the students in the "no grants" group are typically more affluent than students in the other groups. Affluence appears to be positively related to persistence. The group of students who received any type of grant in any amount includes both of the 2 remaining groups. In addition, this "some grant" group includes students who received merit-based and other non-need-based types of grants, many of which are small in their amounts. The group of Pell grant recipients satisfied the financial need criteria of the program, however, some of these students may have received other grants. Finally, the "big" grant group (in which students received grant aid of at least one-half tuition costs) represents the "purest treatment" for grant effect comparisons. This is especially noticeable in the private colleges with high tuition and fees charges. However, the "big" grant group may include some students recruited by the college on the basis of merit (e.g., full athletic scholarships and National Merit Scholars).

In 7 of the 8 comparisons of the "no grant" group and the "big grant" group, the "no grant" group dropped out during the year at higher rates (table 2). This pattern of differences was observed with and without adjustments for family income levels. In public colleges and universities, students who received some grant dropped out at lower rates than students who did not receive any grants during their first 3 years of college (whether unadjusted or adjusted for family income).

Grant effects on rates of return

To estimate the effects of grants on the rates students return to the same school in which they initially enrolled to continue their education, the same 4 groups described above were compared. These estimates are displayed in table 3. The pattern of differences in the grant groups was less consistent than was found for dropout rates, as would be expected because of the timing of the grant receipt and the transition. In both private and public colleges, the "big grant" group returned at a higher rate for the second year (1980-81 to 1981-82 transition). Paradoxically, students who received a Pell grant in 1982-83, were less likely to return to the same school for 1983-84.

Table 2.--Percent of traditional students who dropped out during the year, by grant aid group, unadjusted and adjusted for family income levels

Group	Academic year			
	1980-81	1981-82	1982-83	1983-84
Private 4-year colleges and universities				
Unadjusted:				
No grants	6.9	14.3	3.6	2.8
Some grants	6.0	8.3*	1.5	2.0
Pell grants	7.5	12.1	1.4	0.4
Big grants[1]	2.2**	11.1	0.5*	0.0*
Adjusted:[2]				
No grants	7.9	14.8	3.8	2.8
Some grants	5.0	7.7*	1.3#	1.8
Pell grants	4.9	10.4	1.0#	0.1#
Big grants	0.5*	9.4	0.1**	-0.1**
Public 4-year colleges and universities				
Unadjusted:				
No grants	11.3	12.9	8.0	6.3
Some grants	8.0#	9.0#	3.3**	4.2
Pell grants	9.2	10.4	4.2#	2.8*
Big grants	7.6#	8.6*	3.4*	2.3**
Adjusted:				
No grants	11.6	13.1	7.6	6.3
Some grants	7.6*	8.7*	4.0*	4.0
Pell grants	8.6	10.2	5.1	2.4*
Big grants	7.0*	8.3*	4.1*	2.0**

[1] "Big grants" refers to students who received grants totaling at least one-half of their tuition and fees charges.

[2] The variation in dropout rates by family income levels was removed before calculating the group estimates.

Note.--The symbols (*, **, and #) denote the confidence in the comparison of the estimate with the corresponding no grants estimate. The # denotes a confidence of 90 percent ($1.65 \leq t < 1.96$), the * denotes a confidence of 95 percent ($1.96 \leq t < 2.58$), and ** denotes a confidence of 99 percent ($t \geq 2.58$).

Table 3.--Percent of traditional students who returned to the same college to continue, by year and grant aid group

Group	Academic years		
	1980-81 to 1981-82	1981-82 to 1982-83	1982-83 to 1983-84
Private 4-year colleges and universities			
Unadjusted:			
No grants	75.3	87.3	97.4
Some grants	84.5*	88.9	92.5*
Pell grants	79.9	88.0	7.6**
Big grants[1]	83.4#	86.3	94.0
Adjusted:[2]			
No grants	74.1	85.9	96.3
Some grants	85.6**	90.2	93.6
Pell grants	82.5#	91.2	90.2#
Big grants	85.3**	88.4	95.3
Public 4-year colleges and universities			
Unadjusted:			
No grants	77.1	88.4	93.2
Some grants	81.0	90.6	88.2*
Pell grants	80.6	89.5	85.0**
Big grants	82.1#	89.8	88.4*
Adjusted:			
No grants	77.0	88.4	92.7
Some grants	81.2	90.5	89.4
Pell grants	80.7	89.6	87.1*
Big grants	82.3#	89.8	89.9

[1]"Big grants" refers to students who received grants totaling at least one-half of their tuition and fees charges.

[2]The variation in return rates by family income levels was removed before calculating the group estimates.

Note.--The symbols (*, **, and #) denote the confidence in the comparison of the estimate with the corresponding no grants estimate. The # denotes a confidence of 90 percent ($1.65 \leq t < 1.96$), the * denotes a confidence of 95 percent ($1.96 \leq t < 2.58$), and ** denotes a confidence of 99 percent ($t \geq 2.58$).

Methodology and technical notes

The estimates in this report were based on data from the High School and Beyond first (1982) and second (1984) follow-ups of 11,995 high school seniors who began with the study in 1980. These students responded to questionnaire items concerning when and where they attended postsecondary institutions. In addition, the student financial aid records from the postsecondary institutions attended and data from the Pell grant award files (U.S. Department of Education) were merged with the HS&B data. Of course, not all 11,995 of the HS&B students attended private and public 4-year colleges and universities. In fact, 1,156 attended private 4-year colleges and universities, and 2,278 attended public 4-year colleges and universities full-time in academic year 1980-81.

The estimates for the subsequent transitions were restricted to traditional, full-time students following the normal progression toward a bachelor's degree. These transitions narrowed down the sample sizes monotonically from return to dropout. The 4 groups, used for grant effects comparisons, varied in size as shown in table 4. All estimates were calculated using the weight appropriate for second follow-up HS&B data. This weight adjusts for the probability of selection of the students in the original sample and nonresponse to the second follow-up survey.

Table 4.--Sample sizes for dropout and retention estimates, by type of institution and academic year

Group	Academic year						
	1980-81	1981-82		1982-83		1983-84	
	Dropout	Return	Dropout	Return	Dropout	Return	Dropout
Private 4-year colleges and universities							
Total	1,156	1,083	963	864	804	775	747
No grants	471	435	408	351	333	315	311
Some grants	685	648	555	513	471	460	436
Pell grants	432	407	323	295	234	229	230
Big grants	468	455	355	333	310	306	269
Public 4-year colleges and universities							
Total	2,278	2,043	1,865	1,637	1,672	1,567	1,447
No grants	1,205	1,060	1,058	910	995	917	866
Some grants	1,073	983	807	727	677	650	581
Pell grants	878	802	652	579	505	482	418
Big grants	888	819	637	575	566	543	468

The persistence measures used in this bulletin were based on student reports of attendance. Dropouts were identified by examining length of attendance during the year. For 1980-81, 1981-82, and 1982-83, students who attended full-time during the academic year (September through May) for less than 8 months were classified as dropouts. For 1983-84, the High School and Beyond data were time censored at February, 1984. Hence, the dropout rates for 1983-84 were based on students who attended for 5 or fewer months. Return, the second measure of persistence used in this report, was based on the pool of students who did not drop out during the previous academic year. Students who did not return to the same institution either transferred or did not enroll.

The adjustments for family income, used for estimates in tables 2 and 3, were based on the percentage distribution of the unadjusted percentages, by family income. All percentage estimates can be thought of as means of variables having values of zero and 100. Adjusted estimates were calculated by subtracting the raw estimate for each sample member's family income level and adding the raw grand mean to the sample member's original zero or 100 value for the variable in question. This process removes the variation in the adjusted variable associated with differences in the family income estimates. However, two cautions must be noted. First, it is possible to obtain negative values (see table 2, "Big grants" for academic year 1983-84). Second, other variables may also contribute to the effect without control.

The estimates, while valid for traditional students, may not show appropriate trends or institutional type comparisons for other, non-traditional students. There is some evidence that private colleges and universities may have fewer non-traditional students enrolled than public colleges and universities. Estimates presented in this report cannot be appropriately generalized across all patterns and paces of student enrollment.

Finally, the comparisons reported in this report were based on student's t statistics. Comparisons based on table 1 include the estimates of the probability of a Type I error. To obtain the confidence level for these comparisons, the p-value may be subtracted from one. For example, a $p<.01$ indicates a confidence of at least 99 percent (1-.01=.99). Comparisons based on tables 2 and 3 reflect the significance testing noted in these tables.

Accuracy of estimates

The statistics in this bulletin are estimates derived from a sample. Two broad categories of error occur in such estimates: sampling and nonsampling errors. Sampling errors occur because observations are made only on samples of students, not on entire populations. Nonsampling errors occur not only in sample surveys but also in complete censuses or entire populations.

Nonsampling errors can be attributed to a number of sources: inability to obtain complete information about all students in all schools in the sample (e.g., some students or schools refused to participate, students participated but answered only certain items, etc.); ambiguities in definitions; differences in interpretation of questions; inability or unwillingness to provide correct information; mistakes in recording or coding data; and other errors of collection, processing, sample coverage, and estimation of missing data.

The accuracy of a survey result is determined by the joint effects of sampling and nonsampling errors. In surveys with sample sizes as large as those employed in the HS&B study, sampling errors generally are not the primary concern, except where separate estimates are made for relatively small subpopulations (e.g., Asians and American Indians). The standard errors presented in table 1 are typical of those for

most estimates, except for some of the smaller groups included in tables 2 and 3, where the standard errors were as large as 3.46 percent. All standard error estimates were calculated using Taylor residual procedures, and are available from the Center for Education Statistics.

The nonsampling errors are difficult to estimate. Two major sources of nonsampling error were considered: nonresponse bias, and the reliability and validity of the data. The HS&B instrument response rates were all above 85 percent and the item response rate within instruments, for the items used to develop the estimates in this report, were above 95 percent. The weights used to calculate the estimates were constructed in a fashion that compensated for instrument nonresponse. Investigations of the nonresponse bias found no major problems (see High School and Beyond First Follow-Up (1982) Sample Design Report, by R. Tourangeau, H. McWilliams, C. Jones, M. Frankel, and F. O'Brien, National Opinion Research Center, 1983).

The reliability and validity of the HS&B data have been examined in Quality of Responses of High School Students to Questionnaire Items by W. Fetters, P. Stowe, and J. Owings, Center for Education Statistics, 1984. This study found that the reliability and validity of responses vary considerably depending on the nature of the item and the characteristics of the respondent. Contemporaneous, objective, and factually-oriented items are more reliable and valid than subjective, temporally remote, and ambiguous items; and older, white, or high-achieving students provide more reliable and valid responses than do younger, minority group, or low-achieving students. The estimates in this publication are reasonably reliable and valid.

For more information

For further information on topics reported in this bulletin, contact Dennis Carroll, U.S. Department of Education, Office of Educational Research and Improvement, Center for Education Statistics, 555 New Jersey Avenue NW., Washington, D.C. 20208-1328.